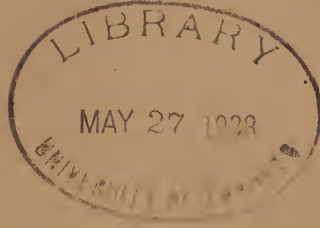


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COMPLIMENTARY



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# MARBLE ISLAND

AND THE

## NORTH - WEST COAST OF HUDSON'S BAY.

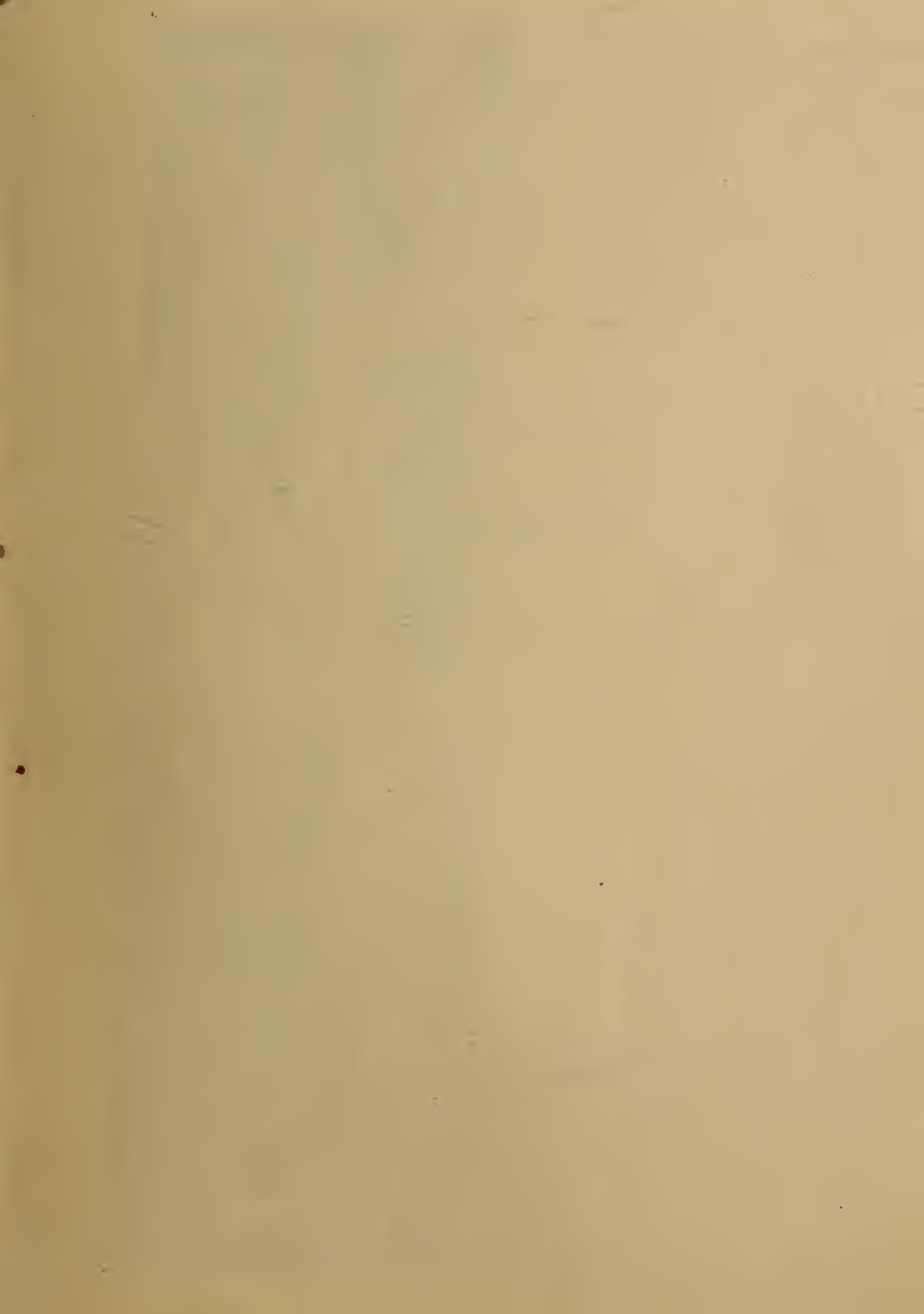
BY

ROBERT BELL, B.A.Sc., M.D., LL.D.,

ASSISTANT DIRECTOR OF THE GEOLOGICAL SURVEY OF CANADA.

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VIEW OF MARBLE ISLAND FROM BRADMAN'S ISLAND

PLATE I. SCENE OF THE WHITE QUARZITES. - 68 NETTINE IN THE HARBOR

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1887.



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Marble Island, in the north-western part of Hudson's Bay, is better known than any other spot in that part of the world, mainly owing to the fact that it has long been the rendezvous of the American whalers who frequent our great inland sea. But it has some very interesting historical associations as well, and its extraordinary appearance has helped to bring it into notice. Although it was first called Marble Island, the name was changed to Brook-Cobham, by Fox, the discoverer of the great Channel which constitutes the north-westward continuation of Hudson's Straits, and which bears his name. However, the original name is now generally adopted.

The island lies about sixteen miles out from the north-western shore of Hudson's Bay, in latitude  $60^{\circ} 40'$ , and between longitude  $91^{\circ}$  and  $92^{\circ}$  west. It has a length of about twenty-five miles by a breadth of five or six. The surface has an undulating outline with long, gentle slopes; and its general elevation is a few hundred feet above the sea. The harbour used by the American whalers is situated on the south side and near the west end. It consists of an outer and an inner harbour. The outer one is formed by a small island called Deadman's Island, and from it, a narrow channel, with no great depth of water, which has been cut by nature through a ridge of rocks, leads to the inner harbour, a land-locked basin measuring fully a mile in its greatest diameter.

Perhaps the best way to give an idea of the appearance and characteristic features of Marble Island will be to describe our own impressions on first visiting it during the summer of 1884 by the S.S. *Neptune*. No one connected with the expedition had been in this quarter before. At the time when we were nearing this side of the bay, we had lost our reckoning owing to thick weather, and although

we happened to be going straight towards the island, none of us at first recognized it on account of the very singular appearance which it presented. All the other shores we had been visiting looked nearly black, but we had also become accustomed to plenty of whiteness in the form of snow, ice and fog-banks. On approaching it in the early morning, at first sight we naturally supposed, from its extent and whiteness, that what we saw before us must be one of these objects; but still, on closer observation, it did not correspond with any of them in shape or other characters. It was too large for an ice-berg (even if there were any in Hudson's Bay, which is not the case), too stationary in position and outline for a fog-bank, and too high for field-ice. Then the extraordinary dark lines and patches which we saw here and there, puzzled us very much. As we drew nearer to it, however, we concluded it must be the far-famed Marble Island, but we had not anticipated seeing such a gigantic mass of marble; and its clean, smooth, white appearance was as wonderful as its extent, for the weathered surface of marble is seldom smooth and white. When within a short distance of the shore, the morning sun shone out and the gorgeous appearance of the steep slopes of pure white rock, washed by the bright sea, with screaming gulls sailing about in the air, was beautiful in the extreme. On entering the harbour behind Deadman's Island, the evidences of the work of civilized man which met the eye, were in singular contrast to the monotony of nature in these desolate regions of the north. A bank of shingle, rising a few feet above the spring tides, forms the highest part of the island. Along this ridge is a row of recently erected white monuments, which stand out in bold relief. Some of them are high columns, but the majority resemble ordinary headstones. They looked like white marble, and where this material was so abundant, it was natural to suppose that they had been formed from it. But appearances, as well as names, are sometimes very deceptive. On going ashore, we found the marble monuments and headstones only painted wood and the marble hills solid white quartzite, as hard as flint. But in spite of the fact that this rock proved to be something very different from white marble, yet even on close inspection, every detail in its appearance was still that of marble. All the most beautiful varieties were there—the pure white, dove-colored, veined, mottled and streaked, lovely lilac and pink, and delicate tints of green and rose color and many other shades, which would charm the most æsthetic eye.



Around both harbours we noticed various discarded articles which had been used in the whale-fishery, and in two or three places on the steep walls of rock overlooking the inner basin were painted lists of the names of many men whose bones are buried among the gravel near by. These, as well as the poor fellows who lie under the wooden monuments of Deadman's Island outside, were seamen and whalers who had died of scurvy, consumption, and other diseases, or from accidents and shipwreck in prosecuting the whale-fishery. The short notes accompanying some of their names suggest many a pathetic history of brave and adventurous men who had gone to these northern waters to earn, by honest toil, the means of bettering their condition. No doubt they must have endured great sufferings from sickness, cold, hunger and pain, during the dark days of the long dreary winter before they died a miserable death, unseen by any, save their equally miserable companions.

In carrying on the whale-fishery around Marble Island the American captains call to their assistance the Eskimos of that region, who are willing and industrious workers, already trained to the business; but it is said they receive very little remuneration for their services. The black whale is stated to be the commonest species taken, but other kinds are met with. In addition to killing the larger whales, our neighbours are reported to collect from the natives considerable quantities of the oil or blubber of the small white whale, the walrus, the narwhal, the polar bear and various kinds of seals. As Hudson's "Bay" is really an inland sea of the Dominion, it is questionable if this business may not be a violation of our treaty rights. The Russian government is understood to exact a very heavy license fee from vessels whaling in the White Sea, which is by no means so land-locked as the Canadian Mediterranean. In this matter we may be allowing a source of revenue to go unimproved.

The Whalers' Harbour in Marble Island is an excellent place for ballasting ships. The beach is steep, so that boats can lie against it at all stages of the tide, and it is almost everywhere covered with small boulders or coarse shingle derived from the white quartzite. While the *Neptune* was lying here the captain availed himself of these advantages and took in a large quantity of ballast to compensate for the weight of fuel we had burnt. When the voyage was over, the vessel went to Sydney for coal, and here these beautifully white

rounded stones from Hudson's Bay, which were now put ashore, attracted considerable attention and were much admired.

Marble Island and the mainland opposite are entirely destitute of timber, which, near the coast, does not extend further north than Seal River, 280 statute miles to the south. From Seal River, the northern limit of the forest, which at the verge consists of only small spruce and tamarac, runs in a north-westerly course almost directly to the mouth of the Mackenzie River, thus leaving two or three hundred miles of the Barren Grounds between this line and the coast opposite to Marble Island.

Although no trees grow on the island, there is an abundance of sub-arctic vegetation. The large ponds or small lakes among the hills in the interior are encircled with green, and they have become the breeding places of swans, arctic and red-throated divers, and other water-fowl. Many species of smaller birds were noticed, and owing to the open nature of the country they probably fall an easy prey to the peregrine falcon which also breeds on the island. The reindeer, or barren-ground cariboo, and the musk-ox, are found on the mainland opposite, which is the southern limit, on the coast, of the latter animal, but it ranges further south in the interior.

The American whalers and others constantly speak of Marble Island as if it were really composed of marble. Although I had not an opportunity of personally examining it before 1884, I had long been aware that the white rock of this island was quartzite, having received specimens of it through friends in the Hudson's Bay Company's service. It appears to be identical with the quartzites of the Huronian series, so largely developed on the north shore of Lake Huron between Killarney and the Spanish River. The Marble Island quartzite must have a very great thickness, and it is unlikely that this is the only locality in the region where similar rocks occur. Indeed we have statements from both Hudson's Bay Company's officers and Indians that similar white rocks are found in abundance on the mainland opposite, and at various places for a long way into the interior in a south-western direction. I have obtained a specimen of quartzite of a light or delicate pink color, said to have been broken from the rock *in situ* on the south side of Nevil Bay, about 150 miles south-westward of Marble Island. Continuing the same course inland, white rocks are reported as occurring around White Rabbit Lake, between Nevil Bay and Hatchet or Wollaston

Lake, and boulders of white quartzite are very numerous at the Methy or Long Portage, still further to the south-west.

Our visit to Marble Island was so short that I had only time to examine the western part, the whole of which consisted of different varieties of light-colored quartzites. The rocks being free from lichens or staining, both the shores and the hills in the interior have a uniform white appearance, which might be taken for that of snow, but for the strong contrast due to the dark brown of the peaty depressions. The stratification is usually very massive. Ripple-marks, varying from coarse and wide to fine and narrow, were observed on the surfaces of many of the beds, especially the thinner ones.

Near the south-western point of the island the quartzite presents beautiful lilac colors of various shades. Here the direction of the dip is N.  $5^{\circ}$  E., *true* (the magnetic variation being  $5^{\circ}$  W.), and the inclination  $80^{\circ}$  from the horizontal plane. At the north-western point the direction of the dip is N.  $80^{\circ}$  W., *true*, and the inclination  $45^{\circ}$ . This is also the prevailing direction and angle in the interior of the west end of the island. But on the north shore, opposite the harbour on the south side, the direction is N.  $65^{\circ}$  W., *true*., and the inclination  $40^{\circ}$ . It will thus be seen that the strike of the bedding varies considerably in different places. It was further observed that although the general course of the rocks might be tolerably straight locally, the lines of stratification undulated a good deal, the minor sinuosities appearing on smooth sections as mere corrugations of the lamination.

On Deadman's Island, the white quartzites pass into grey, and these rocks are associated with a dark glossy micaceous schist, all striking N.  $80^{\circ}$  W., *true*, or dipping N.  $10^{\circ}$  E., at an angle of  $90^{\circ}$ .

In the course of my examination of Marble Island, I observed the debris of a variety of Huronian rocks, including the brown-weathering dolomite of that series, strewn upon the surface, from which it was inferred that these rocks would be found *in situ* at no great distance in the direction from which the drift had come. Since my visit to the island I have received from a friend a most interesting collection of lithological specimens, representing the fixed rocks of the coast from Chesterfield Inlet south-westward to Eskimo Point (where the rocky shore terminates), embracing a distance of about 180 statute

miles in a straight line. They include a considerable variety of species, and from them it is manifest that the Huronian series is well developed and occupies a large area on the north-west side of Hudson's Bay. This would be a highly important fact, even if the collection referred to contained no direct evidence of the existence there of economic minerals, because we already know, from an extensive examination of these rocks in other parts of the Dominion, that they constitute the repositories of numerous metallic ores and other useful minerals, while the primitive Laurentian rocks are almost destitute of them. But in this collection there are eleven specimens of granular iron pyrites, from different parts of this coast, all of which apparently contain small quartz grains. Most of the specimens are angular, and their aggregate weight is about fifty pounds. Mr. Hoffmann, chemist to the Geological Survey, has made an assay of one of these specimens from a bay south of Cape Jones, which forms the southern horn of Rankin Inlet, and found it to contain traces of both gold and silver. A good sized angular piece of similar pyrites, which I obtained from the Eskimos in 1879, and which they brought from a place called Iñari, described as being about two-thirds of the distance from Churchill Harbour to Marble Island, had a small quantity of light bluish-grey magnesian limestone adhering to it. Some of the other specimens of this pyrites have small pieces of soft dark-greenish schist attached to them.

The specimens from the above-mentioned 180 miles of the north-west shore of Hudson's Bay embrace the following rocks: Chloritic schist, dark cherty schist, hard dark argillaceous slate, finely ribboned hornblende and quartz schist, imperfect gneiss, dark silicious breccia with calcspar, dark-green crystalline pyroxene rock, dark chocolate-coloured silicious argillite with conchoidal fracture, calcspar vein-stones, semi-translucent white quartz, red aplite of medium texture, rather fine-grained grey granite, grey diorite, consisting of light-coloured felspar and dark hornblende in small distinct crystals, giving it an even and finely speckled appearance, fine-grained hornblende schists, greenstones, quartz and epidote rock, light grey coarse grained sandstone altered to quartzite and holding fragments of indurated red shale, compact banded white quartz-rock with crystals of iron pyrites in some of the layers, light quartzite like that of Marble Island, grey felsites, crystalline hornblende-rock, diorite, consisting of compact white felspar with long crystals of dark horn-

blende, banded grey hornblende and quartz-rock with some layers approaching chert, mica schists of different kinds, mixed hornblende and mica-schist, chocolate-coloured porphyry with flesh-coloured crystals of felspar and grains of clear quartz, granulite, red jasper with dull fracture, hard brownish-red sandstone, grey felsitic quartzite with lenticular patches of dark mica-schist, chloritic schist, the granular iron pyrites associated with dark-greenish schist above referred to, several hundreds of cubes of iron pyrites, mostly small, taken from a dark glossy schist, quartz veinstone with large scales of light-coloured mica together with garnets, calcspar veinstone with embedded crystals of quartz and having grey steatitic rock adhering to it, also a veinstone of quartz containing silky radiating aggregates of hornblende and a few specks of calcspar and iron pyrites; some greenish schist is attached to this specimen. A loose piece of brown-weathering dolomite with reticulating strings of white quartz was found on Marble Island.

The granular quartziferous iron pyrites of this collection bears a strong resemblance to that of the mines at Capelton, in the Township of Ascot, Province of Quebec, and to that of the more cupriferous pyrites of the Tilt Cove Mine in Newfoundland, as also to the equally rich copper-bearing pyrites more recently discovered among the Huronian rocks at Sudbury, in the Province of Ontario. The specimen of pyrites from Ifiari did not show the presence of copper, but elsewhere in working pyrites veins it has been observed that although this metal may be present only in small quantities at the surface, the proportion increases rapidly in going downward.

The resemblance between the pyrites of the three localities above mentioned is interesting, not only from an economical, but also from a geological point of view, especially in connection with the question of equivalency in age, or otherwise, of the different sets of rocks in which they are found.

At the south-west point of Marble Island, large green stains of carbonate of copper occur on the surface of the quartzite, some of them being three or four feet in diameter. They are probably due to the decomposition of sulphide of copper in the rock.

In 1850, James Tennant, Esq., Professor of Mineralogy, in King's College, London, examined seven rock-specimens which had been brought from the north point of Rankin Inlet, directly opposite to and in sight of the west end of Marble Island, and among them he men-

tions "quartz, enclosing chlorite and copper-pyrites; carbonate and silicate of copper, with copper-pyrites on argillaceous slate; ditto, with a thin coating of green carbonate of copper."

Judging from what Professor Tennant says as to a few rock-specimens which were submitted to him from Repulse Bay and vicinity, 300 miles northeastward of Marble Island, the Huronian rocks would appear to occur there also. One specimen from this bay, he describes as "quartz coloured by oxide of iron and containing minute particles of gold." The existence of visible gold in quartz at Repulse Bay is an important fact. It has been already mentioned that gold and silver were found by assay in a specimen of iron pyrites from a bay south of Cape Jones, not far south-west of Marble Island. Both gold and silver have been discovered by assay in specimens of quartz or pyrites which I have brought from various parts of Hudson's Bay and Straits. In 1877, Dr. Harrington, who was then chemist to the Geological Survey, detected both gold and silver in iron pyrites which I had collected from a small vein cutting gneiss on a point about one mile south of the mouth of Great Whale River, and also in pyrites from veins in the dolomite which forms Dog Island, close to the main shore, a few miles north of the Cape Jones of the East-main coast. The galena of the old mine, about three miles north-east of Little Whale River trading post, was found to contain 5.104 ounces of silver to the ton of 2,000 lbs., and that from the south side of the inlet of Richmond Gulf, 12.03 ounces to the same quantity of ore. More recently, Mr. Hoffmann, now chemist to the Survey, has found small quantities of gold and silver in quartz which I obtained from a thin vein on one of the Ottawa Islands, in the north-eastern part of Hudson's Bay. He has also proved the occurrence of the precious metals in quartz veinstones, which I brought from Cape Prince of Wales, about the middle of the south side of Hudson's Straits; Cape Chudleigh, on the south side of the eastern entrance to the Straits; and Nachvak Inlet, on the Labrador coast, about 140 miles south of the last mentioned cape.

From the data I have gathered at Marble Island and that afforded by the valuable series of specimens which I have referred to, as well as from the fact that Laurentian types of rocks are absent from the collections, it is to be inferred, as already stated, that we have a great development of the Huronian series along the 180 miles of coast from Chesterfield Inlet to Eskimo Point, both in regard to the variety of

the rocks themselves and their geographical extent. The information afforded by the materials of the drift and that derived from the other sources I have alluded to, all indicate that these rocks likewise occupy a very large area of country extending inland from this part of the coast. This unexplored region would, no doubt, prove a highly interesting field for research both to the geologist and the miner.

In my various reports on Hudson's Bay and Straits, I have had occasion to refer to the indications everywhere to be met with, of the great changes which have taken place in the relative levels of the sea and land in comparatively recent geological times. Similar phenomena have been observed in Baffin Land and on the northern shores of the American continent, as well as on all the islands north of the mainland, by the officers of the numerous Franklin search expeditions, and other explorers. This change in the relative levels of the land and water has not, therefore, been limited to "an area of upheaval," but has been general in all these northern regions of the earth.

The evidence of the rapid rise of the land, or perhaps more correctly speaking, of the recession of the sea, is strikingly manifested on Marble Island. The smooth pebbles and rounded stones of the ancient beaches, being snowy white, the horizontal lines of the latter are rendered conspicuous in the naked landscapes by their contrast with the yellowish-grey or brown color of the vegetable matter which occupies the intervals between them. They occur at numerous different levels, up to 200 or 300 feet, and some at still greater elevations.

The solid rocks of Marble Island are pretty thoroughly glaciated and the striæ are very distinct. At the north-west point of the island their course is S. 25° E. *true*, and on Deadman's Island it is S. 15° E. *true*. It may be mentioned in connection with this subject that at Fort Churchill the course of the glacial striæ is S.S.W., and at the first solid rock seen in ascending the Hayes River it is S.S.E., with an older set at the same place, running nearly east and west. To the west and south of James' Bay the general course is south-westward; along the southern part of the East-main coast, westward, and toward the northern part of this coast, northward; while in Hudson's Straits it is eastward. From these facts it might be inferred that during the glacial period, the ice which formed in the basin of Hudson's Bay, or flowed into it from the high lands to the north-west and those of the Labrador peninsula to the east, found outlets

towards the south and south-west, and also to the north-eastward into Hudson's Straits. The glacial debris, found all around the Bay and in the Straits, has been transported in directions corresponding with this view of the general conditions during the drift period.

At the east end of Marble Island there is a bay or harbour, with which a very sad history is associated ; and as the events connected with it form an interesting chapter in the progress of discovery in these parts, I may be here allowed to devote a little space to the subject. When the Hudson's Bay Company first established a trading post at the Churchill River, in 1715, the Indians who ranged over the Barren Grounds to the westward of Marble Island frequently brought samples of native copper to the settlement, and stated that they were found near a large river, which afterwards proved to be the Coppermine, flowing into the Arctic Sea. At that time, however, the Company's people believed the river referred to emptied into Hudson's Bay, as they did not suppose these savages could wander or trade as far as a great river discharging into another sea. In addition to this pure copper, it was supposed that "gold and other valuable commodities" were to be found "to the northward." To prove this and to discover the North-west Passage, the Company, in 1719, sent out two vessels, the *Albany* frigate, George Barlow, master, and the sloop *Discovery*, David Vaughan, master, under the command of Mr. James Knight, "who had been many years governor at the different factories in the Bay, and who had made the first settlement at Churchill River."

Mr. Knight was then nearly eighty years of age, but nevertheless he appears to have been full of enthusiasm ; and Hearne says "he was so prepossessed of his success and of the great advantage that would arise from his discoveries, that he procured and took with him some large iron-bound chests to hold gold-dust and other valuables which he fondly flattered himself were to be found in these parts."

Neither of the vessels having returned to England, and the Company feeling alarm for their welfare, in 1722 a sloop called the *Whalebone*, John Scroggs, master, was sent from Churchill in search of them, but he returned the same season without having ascertained anything definite as to the whereabouts of the vessels.

The story of the unhappy termination of this expedition is graphically told by Samuel Hearne in the account of his "Journey from



Fort Prince of Wales to the Northern Ocean, in 1769 to 1772," and as it is not long, I shall quote what he says:—

“The strong opinion which then prevailed in Europe respecting the probability of a North-west passage by the way of Hudson’s Bay, made many conjecture that Messrs. Knight and Barlow had found a passage and had gone through it into the South Sea by the way of California. Many years elapsed without any other convincing proof to the contrary, except that Middleton, Ellis, Bean, Christopher and Johnson had not been able to find any such passage. And notwithstanding a sloop was annually sent to the northward on discovery and to trade with the Eskimos, it was the summer of 1767 (forty-eight years) before we had positive proofs that poor Mr. Knight and Captain Barlow had been lost in Hudson’s Bay.

“The Company were now carrying on a black-whale fishery and Marble Island was made the place of rendezvous, not only on account of the commodiousness of the harbour, but because it had been observed that the whales were more plentiful about that island than on any other part of the coast. This being the case, the boats, when on the lookout for fish, had frequent occasion to row close to the land, by which means they discovered a new harbour near the east end of it, at the head of which they found guns, anchors, cables, bricks, a smith’s anvil and many other articles, which the hand of time had not defaced, and which, being of no use to the natives, or too heavy to be removed by them, had not been taken from the place in which they were originally laid. The remains of the house, though pulled to pieces by the Eskimos for the wood and iron, are yet very plain to be seen, as also the hulls, or more properly speaking, the bottoms of the ship and sloop, which lie sunk in about five fathoms of water, toward head of the harbour. The figure-head of the ship, and also the guns, &c., were sent home to the Company, and are certain proofs that Messrs. Knight and Barlow had been lost on that inhospitable island, where neither stick nor stump was to be seen, and which lies sixteen miles from the mainland. Indeed, the main is little better, being a jumble of barren hills and rocks, destitute of every kind of herbage except moss and grass, and at that part, the woods are several hundreds of miles from the sea-side.

“In the summer of 1769, while we were prosecuting the fishery, we saw several Eskimos at this new harbour, and perceiving that one or two of them were greatly advanced in years, our curiosity was

excited to ask them some questions concerning the above ship and sloop, which we were the better enabled to do by the assistance of an Eskimo, who was then in the Company's service as a linguist, and annually sailed in one of their vessels in that character. The account which we received from them was full, clear and unreserved, and the sum of it was to the following purport :

“ When the vessels arrived at this place (Marble Island), it was very late in the fall, and in getting them into the harbour, the largest received much damage ; but on being fairly in, the English began to build the house, their number at that time seeming to be about fifty. As soon as the ice permitted in the following summer (1720), the Eskimos paid them another visit, by which time the number of the English was greatly reduced, and those that were living, seemed very unhealthy. According to the account given by the Eskimos, they were then very busily employed, but about what, they could not easily describe, probably in lengthening the long-boat, for at a little distance from the house there is now lying a great quantity of oak chips, which have been most assuredly made by carpenters.

“ Sickness and famine occasioned such havoc among the English that by the setting in of the second winter their number was reduced to twenty. That winter (1720) some of the Eskimos took up their abode on the opposite side of the harbour to that on which the English had built their houses, and frequently supplied them with such provisions as they had, which chiefly consisted of whales' blubber and seals' flesh and train oil. (I, Hearne, have seen the remains of those houses several times ; they are on the west side of the harbour and in all probability will be discernable for many years to come). When the spring advanced, the Eskimos went to the continent, and on their visiting Marble Island again in the summer of 1721, they found five of the English alive, and those were in such distress for provisions that they eagerly ate the seals' flesh and whales' blubber quite raw, as they purchased it from the natives. This disordered them so much that three of them died in a few days, and the other two, though very weak, made a shift to bury them. Those two survived many days after the rest and frequently went to the top of an adjacent rock and looked earnestly to the south and east, as if in expectation of some vessel coming to their relief. After continuing there a considerable time together, and nothing appearing

in sight, they sat down close together and wept bitterly. At length one of the two died and the other's strength was so far exhausted, that he fell down and died also in attempting to dig a grave for his companion. The skulls and other large bones of those two men are now lying above ground, close to the house. The longest liver was, according to the Eskimo account, always employed in working of iron into implements for them ; probably he was the armourer or smith."





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